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Qadhafi sees similarity between Libya's role and that of Christ

ROME, April 11 (R). — Libyan leader Muammar Qadhafi says his country's international role compares with the work of Jesus Christ. In an Italian television interview broadcast tonight, the 36-year-old head of state also said that Libyan women were inadequate "either biologically or morally" to do the same job as men. In an interview he was asked why his country's image was often associated with terrorism overseas. He replied: "When Jesus appeared he was quickly attacked... because he was a prophet that brought the new, the good..."

Jordanian envoys continue tour of Arab capitals

AMMAN, April 11 (JT). — Jordanian envoys continued touring Arab capitals for the third day today delivering messages to Arab heads of state from His Majesty King Hussein. The messages are related to Jordanian Interior Minister Sultan Amar, Mr. Arar said that Col. Al Ghasbi had agreed to take part in the summit. Mr. Arar will leave Sana'a tomorrow for Khartoum to deliver the Royal Message to President Nimeiri.

Red Brigades prison guard shot dead

TURIN, Italy, April 11 (R). — Three gunmen today shot and killed a guard at a prison where 15 Red Brigades urban guerrillas are being held here while on trial for subversion. But one of the gunmen was wounded in the attack and later arrested at a medical clinic. His capture could give police a breakthrough in their hunt for the Red Brigades gang which kidnapped former Italian Premier Aldo Moro last month. In Paris, French television said it received a call purporting to come from Signor Moro's kidnappers today threatening to kill him on Thursday unless their demands were met. The Red Brigades have not so far claimed responsibility for gunning down the prison guard. But police sources said the killing was very similar to two previous Red Brigades murders.

World News Roundup...

Eritreans accuse Ethiopia of bombing

ROME, April 11 (R). — Eritrean rebels said today that MIG jets were dropping napalm and cluster bombs on villages near Asmara and Massawa apparently in preparation for an Ethiopian offensive in the country's northernmost province. "Their strategy first of all is to retake the road between the capital, Asmara and the port of Massawa," Mr. Gabry Tegehai of the Eritrean People's Liberation Front (EPLF) told Reuters. "This is their most important supply line."

Soviet U.N. official defects

UNITED NATIONS, April 11 (AP). — Arkady N. Shevchenko, the highest ranking Soviet citizen employed by the United Nations, is staying away from his job because of "differences with his government," a U.N. spokesman said yesterday. Shevchenko, a Ukrainian, is a salaried employee of the U.N. secretariat and is not a member of the Soviet government's U.N. mission. In Washington, State Department spokesman Tom Reston said the department had been contacted by Ernest Gross, Shevchenko's New York lawyer, and Gross indicated the Soviet official would not return to the Soviet Union. But Reston said Shevchenko had not asked for asylum in the United States. He said Soviet officials had requested a meeting with Shevchenko and Gross had arranged one.

Shah meets Saudi defence minister

TEHRAN, April 11 (R). — The Shah received in audience here today Saudi Arabia's Minister for Defence and Aviation, Prince Sultan bin Abdulaziz. Iran's War Minister, Gen. Reza Azimi, and the Saudi Arabian Ambassador here, Mr. Ibrahim Bakr, were also present, official Iranian sources said.

Begin to be checked up

JERUSALEM, April 11 (AP). — Israeli Prime Minister Menachem Begin will enter a hospital for a routine checkup Wednesday, his office announced today.

Single shot killed kidnapped baron

ANFWERP, Belgium, April 11 (R). — Kidnapped Belgian millionaire Baron Charles Bracht whose body was found yesterday was killed by a single shot in the head, police sources said today. The sources said police believed the baron had been killed while struggling with the captors. Blood and tufts of hair were found on the ground near the baron's car.

Burns takes issue with Carter's dollar policy

TOKYO, April 11 (R). — Mr. Arthur Burns, the conservative former Chairman of the U.S. Federal Reserve Board (central bank), today publicly took issue with the Carter administration's attitude towards the dollar. Speaking only hours before President Carter unveiled his anti-inflation strategy, Mr. Burns called for strong government action to halt the dollar's decline.



Maj. Gen. Emmanuel Erskine (right) Commander of UNIFIL shakes hands with an unidentified Israeli army officer in occupied south Lebanon on Tuesday morning as the Israeli forces began a token pull out. (AP wirephoto)

Ceausescu pushes Israel to negotiate with PLO

WASHINGTON, April 11 (R). — Romanian President Nicolae Ceausescu is expected to raise new ideas for Korean unification and a Middle East settlement when he meets President Carter this week.

Mr. Ceausescu, who has frequently served as a bridge in East-West relations, will confer with Mr. Carter at the White House tomorrow and on Thursday. It will be President Ceausescu's fourth trip to the United States in eight years and he will be seeking renewed assurances of American support for Romania's independent course despite its membership in the Communist Warsaw Pact.

American officials expressed interest in statements by President Ceausescu that he has indications Communist North Korea might be willing to negotiate a federation with South Korea preserving the existing social systems of both halves of the divided country. In an interview published in Hearst newspapers last week, President Ceausescu said he wanted to talk to Mr. Carter about the problem of bringing peace and reunification to the Korean peninsula.

The Romanian leader, whose country is the only Communist state maintaining relations with Israel and all its Arab neighbors as well as with the Palestinian Liberation Organisation (PLO), said he also wanted to deal with the Middle East in his talks with Mr. Carter. He indicated that the stalled Israeli-Egyptian peace negotiations should now be followed by an international conference on the Middle East that would bring the PLO to the conference table.

Middle East

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Met PLO envoy

In Bucharest it was reported that the Romanian president has discussed the Middle East situation with a special envoy sent by Palestinian leader Yasser Arafat.

Mr. Ceausescu told the emissary yesterday the Palestinian issue was the "essential problem" in the Middle East and the PLO should take part in peace negotiations. Mr. Arafat was originally due to visit Bucharest to brief Mr. Ceausescu on PLO views before the Romanian leader left for the United States.

Instead the PLO leader sent his personal political adviser Hani Al Hassan to confer with Mr. Ceausescu. PLO officials had no explanation for Mr. Arafat's decision not to make the trip himself.

Mr. Ceausescu discussed Middle East developments with Israeli Foreign Minister Moshe Dayan here last week. Mr. Dayan rejected the Romanian leader's view that Israel should negotiate with the PLO.

In an interview published in Tel Aviv today the Romanian president said that Israel's response to the peace overtures of Egyptian leader Anwar Sadat had not met up to expectations.

Mr. Ceausescu also said in the interview in the English-language Jerusalem Post that a comprehensive Middle East settlement could only be worked out with the participation of Syria, Jordan and the PLO.

He was quoted as saying: "I must say that as against President Sadat's firm initiative the response from Israel and from Premier Menachem Begin has not been up to expectations."

At least 20 killed in fresh Beirut factional fighting

BEIRUT, April 11 (Agencies). — Lebanon's civil war forces battled each other with machineguns and rockets today despite a Syrian warning that gunmen in Beirut would be shot on sight. Combatants in the Moslem district of Shiyah and neighbouring Christian Ain Rummaneh, -- flashpoints of the 1975-76 civil war agreed that at least nine people had been killed and more than 30 wounded since fighting erupted on Sunday.

The Syrian-dominated Arab League deterrent force policing the civil war truce issued a communique last night saying the force would shoot any gunman on sight and shell any source of fire.

But rightist militiamen in Ain Rummaneh and Lebanese leftist fighters hammered each other in the heaviest fighting since last February's clashes between Syrian troops and rightists in which at least 150 people died. The deserted streets along the line dividing the two densely-populated districts echoed with the roar of heavy machineguns and the crash of exploding rockets.

No deterrent

Asked what he thought of the deterrent force warning, a right-wing militiaman in Ain Rummaneh burst into laughter. "Deterrent force?" he said. "Which deterrent force? It is not deterring anybody, as you can see."

The 30,000-strong Arab League force ended the civil war in most of Lebanon in Nov. 1976, when it moved into the main combat zones to separate the combatants.

Most roads linking the two districts were closed today. Civilians sprinted across stretches exposed to firing positions on the other side as snipers took over rooftops.

Both sides accused each other of having started the fighting. As usual in this city of contrasts, life continued normally in areas not affected by the combat.

Localised fighting

At noon Arab peacekeeping forces opened fire at rival Moslem and Christian militias in southeastern Beirut witnesses reported.

Reagan supports Israeli settlements on West Bank

CHICAGO, April 11 (R). — Former California governor Ronald Reagan today defended Israel's West Bank settlements and said Israel could not be expected to pull back to borders that would leave it open to artillery attack. "Israel has never tried to annex the West Bank and the present administration in Washington is dead wrong when it says Israel's West Bank settlements are illegal," Mr. Reagan told a dinner meeting of local Jewish leaders here.

He said U.N. resolution 242 "makes it plain that Jewish and Arab Palestinians have a right to settle there until Jordan and Israel between them decide on secure and recognised borders."

The conservative Republican leader, a candidate for his party's 1980 presidential nomination, also said, "for the U.S. to suggest that Israel fall back to borders which leave potential enemies within artillery range of its very heartland is dishonest, unless we are willing to offer an iron-clad guarantee of strong American support and defence."

Mr. Reagan accused President Carter of waffling in his support for Israel, citing Mr. Carter's early backing, later withdrawn for self-rule for West Bank Arabs, with Israel providing security in the area.

"It is another of the vacillations which are all too characteristic of this administration's foreign policy," he said. The 67-year-old former actor also criticised the Carter administration for placing responsibility for Palestinian refugees on Israel rather than Jordan, and for urging Soviet participation in Middle East peace deliberations.

"Nor should our government be imposing or even advancing conditions upon which a peace agreement in the Middle East must be predicated," he said.

At the same time, negotiations for a new treaty to limit U.S. and Soviet long-range bombers and intercontinental ballistic missiles are entering a critical phase with U.S. Secretary of State Cyrus R. Vance's mission to Moscow late next week.

By moving on all three fronts, Carter appears to be undertaking a concerted drive to fulfill his 1976 presidential campaign promise to take the lead in curbing the arms trade -- even while he has not made good on the twin promise to cut U.S. defense spending.

Carter is making his moves at a time when the U.S.-Soviet relationship may be at a vital juncture. Just last Friday, speaking from the deck of a navy warship off Vladivostok, Soviet President Leonid Brezhnev accused Carter of stalling on a new weapons agreement for

China urges Israeli withdrawal

HONG KONG, April 11 (R). — China today urged Israel to withdraw its troops from Lebanon immediately, totally and unconditionally, the New China News Agency reported. The official people's daily in a commentary charged that "the Israeli aggressors are trying to occupy large tracts of land in south Lebanon on a permanent basis." The paper said the Israeli authorities position concerning Lebanon was totally unjustified, according to the agency. "The Israeli aggressors must withdraw from the southern part of Lebanon rapidly, completely and unconditionally."

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Norwegians take over as Israelis make token withdrawal in S. Lebanon

RASHAYA FOUKHAR, Lebanon, April 11 (R). — Israeli soldiers pulled back a short distance from their forward positions in south Lebanon today in a full withdrawal decreed by the United Nations security council.

Smartly-uniformed Norwegian troops took over from the dust-stained Israelis who piled into armoured carriers and rumbled off a few kms. down the road.

The pull-out from seven points in the eastern sector of south Lebanon took the Israelis back between two and seven kms.

Observing the hand-over in this shattered village, ten kms from the Israeli border, was Gen. Emmanuel Erskine, Ghaian commander of the United Nations Interim Force in Lebanon (UNIFIL).

Rashaya Foukhar was a Palestinian stronghold before the Israelis crashed across the Lebanese border on March 14. The scale of devastation testified to the heavy Israeli air and artillery bombardment which chased the Palestinians out of the village.

The village used to be a Christian community of 2,000 people. In the middle of the town could be seen the shattered belfry of a Christian church.

"Today marks the beginning of the major withdrawal," Gen. Erskine said. "Our job is to see that the area is not used for hostile actions."

Asked whether the U.N. forces would fire on Palestinian guerrillas, Gen. Erskine said: "We will fire on anyone who makes it difficult for us to execute our duties."

Israelis have been openly sceptical of U.N. willingness to resist Palestinian violence -- especially following weekend reports that Norwegian soldiers retreated in the face of Palestinian gunfire at Kaoukaba, about 16 kms. north of here.

Gen. Erskine said he believed the UNIFIL would need more troops in the eastern sector to fulfil its mandate. Rashaya Foukhar was a Palestinian stronghold before the Israelis crashed across the Lebanese border on March 14.

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"That is a political decision," he said. But Israel has made plain it would be very reluctant to close this point of contact with the south Lebanese Christian forces.

Newly-paved stretches of road laid down by the Israelis inside south Lebanon indicated that the Israelis still hoped to have contact with parts of the region, at least.

New opinion poll shows Weizman's popularity rising, Dayan's waning

TEL AVIV, April 11 (R). — The popularity of Defence Minister Ezer Weizman has risen in recent months, but that of Foreign Minister Moshe Dayan has waned, according to a public opinion poll published here today. The poll, in the independent Haaretz daily, showed that Mr. Weizman's popularity was 78.3 per cent this month -- 6.7 per cent more than in January. In the same period Mr. Dayan's popularity dropped by 5.9 per cent to 60.2 per cent.

Carter explores new ground to curb arms race with Soviet Union

WASHINGTON, April 11 (AP). — U.S. President Jimmy Carter is underscoring his determination to curb the arms race by opening exploratory talks with the Soviet Union on banning bunter-killer satellites in space and resuming separate negotiations on arms sales to developing nations.

At the same time, negotiations for a new treaty to limit U.S. and Soviet long-range bombers and intercontinental ballistic missiles are entering a critical phase with U.S. Secretary of State Cyrus R. Vance's mission to Moscow late next week.

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ons during a visit to Moscow a year ago. Last month the administration formalised the proposal. Within a few weeks, even while questioning U.S. interest in arms control, the Russians agreed. A site is to be selected for the talks, which are planned for sometime next month.

The arms sales negotiations, meanwhile, are directly linked to Carter's campaign commitment to reduce U.S. weapons proliferation. Talks on this subject are especially aimed at curbing sales to developing nations. In 1976, according to U.S. estimates, the Russians delivered \$2.19 billion worth to such countries while the United States supplied almost \$4 billion in arms.

Symbolic scene

The scene of the speech was symbolic -- near the Siberian city where three and a half years ago Brezhnev and President Gerald R. Ford concluded a tentative agreement to limit strategic weapons. That agreement has yet to be completed and put in treaty form.

Vance defends Carter's policies: Page 6

Over the last several weeks, the United States and the Soviet Union have pelted each other with accusations and veiled threats. Carter, in a March 1 speech, raised sharp questions about the direction of Soviet policy.

The new rounds of negotiations could reverse that trend. So far, only the Russians have developed the capability to seek out satellites in orbit and destroy them.

Vance first broached the idea of banning anti-satellite weapons during a visit to Moscow a year ago. Last month the administration formalised the proposal.

Sales could increase

In his race against Ford, Carter charged U.S. arms sales "fuel regional arms races and complicate our relations with other supplier nations."

As president, he has ordered an eight per cent cut in new commitments, but also proposed selling U.S. jets to Egypt, Sudan and Saudi Arabia in order to improve relations with moderate Arab countries.

JORDAN TIMES

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The tyranny of stamp men

The effort now underway to revamp the entire civil service structure in Jordan is probably the single most important link in Jordan's long-term development drive, and we sincerely hope that the campaign to streamline and improve the efficiency of the government bureaucracy is carried through rigorously and effectively. If it is not, we will only be fooling ourselves, a luxury that we cannot afford. The most important element in the reorganisation of the civil service is the need for decentralised decision-making, and it is a good sign that this will get high priority.

But the overall requirement in this reorganisation effort is to sit down and discuss very basic concepts such as the aims of individual offices and whether the system of work now used in the government helps or hinders efforts to reach one's stated goals. For example, we recently had a rather mind-boggling experience at the Interior Ministry. Going in to apply for a routine permit for a foreign tourist to visit Jordan across the King Hussein Bridge, we were told to get a 30 fils stamp before the paperwork could be processed. At 12:30 p.m., the man who sells stamps outside the ministry had closed shop and gone home, and we were told that we had to come back the next day. But the Interior Ministry personnel were in their offices working until 2:30 p.m., and we ended up unable to process the paperwork until the next day. This is the result of a bad system that produces bad results. This is a small example, but it is typical of the archaic system by which things are done. If the stamp man decides to go home for lunch early, does work grind to a halt in every ministry?

These are the underlying factors that must be thoroughly discussed in coming up with a reorganised civil service. A more streamlined and efficient system of management is required, and we look forward to progress in this area.

ARAB PRESS COMMENTARY

AL RA' Tuesday dealt with reports from Cairo saying that a Romanian envoy has recently acquainted the Egyptian leaders with a plan prepared by President Ceausescu for the reconvening of the Geneva Middle East peace conference with all parties concerned taking part.

It was reported that President Ceausescu will inform President Jimmy Carter of his plan when he meets him in Washington within the next few days. The newspaper says that Israeli Foreign Minister Moshe Dayan might have been briefed of the plan during his recent visit to Bucharest, whereby the Romanian leader became convinced to go ahead and announce the plan within the next days.

However, Al Ra' adds, the Romanian plan, like many previous ones for a settlement, will not carry with it a balsam for curing Arab differences, nor will it solve the problem overnight. Hence Arab unity of action and building up Arab power, as now sponsored by Jordan, remain the most important things. Any solution that comes from outside, in the absence of an Arab capability to influence the course of events, will only be to the disadvantage of the Arabs, the newspaper says.

Under the heading "A Whiff of the Plot", AL DUSTOUR speculates that the recent bloody clashes in Beirut between the Phalangists and the Palestinians were an attempt, a plot, to "re-kindle the fuse following Israel's occupation of south Lebanon."

The newspaper asks: "Is it a new episode in the Lebanese tragedy which engulfed Lebanon two years ago and has not finished yet?"

Al Dustour points out that Israel, which is due to withdraw partially from south Lebanon today, is engaged in building fortifications there. Such a withdrawal is a theatrical move of no value, and political observers see it as a mere attempt to alleviate world pressure upon Israel to implement Security Council Resolution 425 calling for a complete and immediate pullback from south Lebanon the newspaper maintains.

WHAT'S GOING ON

Art Exhibition

Paintings by Ibrahim Najjar Abul Rub are on display daily at the Goethe Institute till next Saturday.

Film

The British Council is showing "Lord of the Flies," a film directed by Peter Brook, tonight at 6:30. Reserve free tickets before the performance.

Cookery Exhibition

There will be a Spanish cookery demonstration this morning at 10:30 at the YWCA, near 3rd Circle, Jabal Amman, given by Countess Maruja Ondino.

Grand plans are envisaged for thermal springs at Zarqa Ma'in

Text and photos
By Barbara Beesley
Special to the Jordan Times

Although much publicity has been given in recent years to Jordan's archaeological sites and antiquities the natural phenomena of Jordan's thermal springs (of which all but two are also classified as mineral) has gone largely unnoticed.

For centuries man has taken advantage of the therapeutic effect of such springs and great spas have been developed in different parts of the world. The earliest evidence of such use of the springs in Jordan can be found in Madaba, where a mosaic depicts Herod bathing - presumably at Zarqa Ma'in. Remains of Roman baths are to be found at Zarqa, near Jarash and at Al Hammeh and Abu Dabbeh in the north.

Since the days of the Romans the springs seem to have declined in popularity and only in recent years has any attempt been made to develop the springs for the use of the general public, and then only in a very simple manner.

In the 1960's Al Hammeh was developed by a private company to the extent that there now exist a swimming pool, rest house, restaurant and campground. At about the same time the site at Zarqa Ma'in was developed, also in a very simple way, by the government with similar facilities to those at Al Hammeh - chiefly a swimming pool built round one of the hot springs which is open seven days a week and caters to male and female bathers on a rota basis throughout the day.

On either side of the river nearby is the camping area where tents may be bired for overnight stays. There are also a few chalets for hire. Up a flight of steps one reaches a ridge on which stands a swimming pool dating back to King Abdullah's time and now reserved for 'special visitors'.

All this is rather primitive compared with the grandiose plans now being drawn up for a major spa complex at Zarqa Ma'in. The Jordan Times visited the Ministry of Tourism and Antiquities and interviewed Mr. Abdul Khader Shuman, project officer for the development of Zarqa Ma'in and later visited the site to bring back this report.

The Zarqa-Ma'in springs

Sixty five kms. southwest of Amman at the end of a road which turns off the King's Highway at Madaba lies a deep gorge set in the midst of a wild rocky landscape bordering the Dead Sea. As one descends the steep winding road on the north side of the gorge to the river far below the first of the thermal springs of Zarqa Ma'in comes into sight. There are 59 springs in all which join the river, basically a cold fresh water stream, either by bubbling out of the ground at just above water level or by falling in cascades from the rocks high above. The most spectacular of the waterfalls is Al Shallah. The river is shallow and since the sides of the gorge rise sharply the heat can be felt quite keenly as one walks through the pass.

Although scenically beautiful (the area is a proposed national park) it is not primarily the scenery that now draws thousands of visitors a year to Zarqa Ma'in. Rather they come to take advantage of the alleged therapeutic properties of the spring water which is not only extremely hot (45°-63°C) whereas the maximum temperature needed for a spa is 35°C) but is also very high in mineral content.

According to German standards (DDS) a spring can be classified as mineral if the total ratio of dissolved salts in



AL SHALLAL WATERFALL - "Crown" of the hot springs, situated in middle of the gorge. In the master plan it is intended to emphasise this spectacular waterfall; a dam will create a reflecting pool. Visitors will be able to go to the foot of the falls by means of a pedestrian bridge.

the water is not less than one thousand per million. Tests at Zarqa Ma'in have shown the dissolved salts to constitute 2,000 units per million. This excellent concentration of salts places the springs in the same category medicinally as those at some of the best known spas in Europe. At Luiker Bad in Switzerland for instance, which yearly attracts several hundred thousand visitors from all over Europe, the temperature and discharge of water are much less although the mineral properties are similar.

The plan to develop the site at Zarqa Ma'in into a spa was formulated in the early 1970's, but first the mineral content of the water had to be determined to judge the feasibility of a spa. Water analysis tests were carried out. The chemical-biological analysis was completed in Germany by Institute Fresenius at Wiesbaden. The results proved positive for development of a spa. The mineral water being classified as sodium-calcium chloride therm. It is of therapeutic value for rheumatism and joint pains and also beneficial to the pharynx and upper respiratory tract. It contains a high concentration of fluorine - which is very good for children to drink, as it prevents tooth decay. Radioactivity is present but to a low concentration not affecting the human body. Very little sulphur was detected and therefore no therapeutic effect on

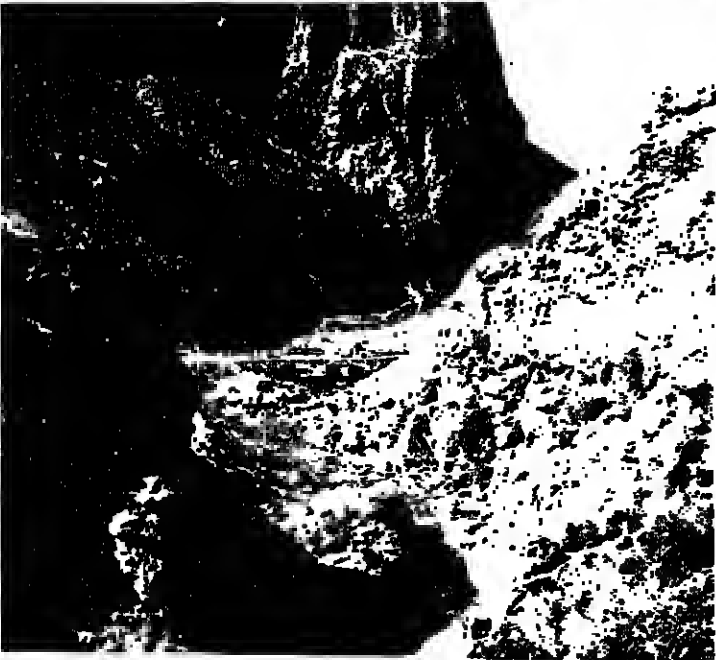
skin diseases is mentioned in the report.

Master plan

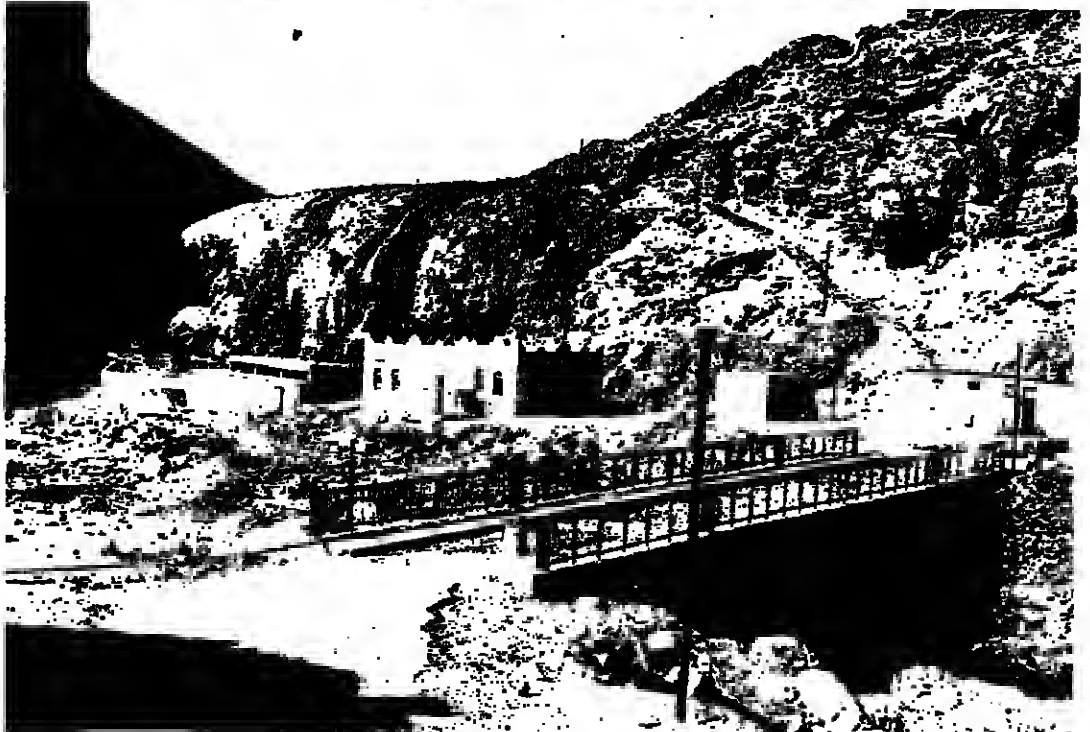
Having been given the go-ahead by the results of these tests, the master plan's terms of reference were drawn up by the Ministry of Tourism together with the National Planning Council and tendered on an international level. A Swiss firm Societe Generale pour Industrie was chosen in association with a local firm of co-A. R. Jardaneh to prepare the consulting engineers Mohammad master plan and design the installations. For this a fee of J.D. 100,000 would be paid. The first and second reports were submitted last year and the final report was handed in recently.

The Master Plan: Terms of Reference stated a policy to "assure preservation of scenic and mineral water assets of the area and allow for their systematic use both by visitors and industrial users." The latter a reference to the proposed preparation of bottled mineral water at a later date.

Great care has to be taken if the scenic beauty is not impaired as the gorge is very narrow and there is little room for development. Since the opening of the access road the number of visitors to the site has increased to the extent that the carrying capacity of the road has been exceeded and the unique nature of the site



GENERAL VIEW of Zarqa Ma'in taken from the road which winds its way down the northern slope of the gorge in a series of breathtaking hairpin bends. Far below the river and in the distance can be seen the existing facilities beyond the bridge.



PUBLIC AMENITIES as they exist for today's visitors. In the middle of the picture is the new mosque built last year. The other buildings date back to the sixties and include on the left, a cave pool, and a few chalets. The steps behind lead up to the Emir's pool (named after King Abdullah in whose reign it was built) and further chalets, now closed. This is the site for the new Hotel Complex and Thermal Clinic. All existing buildings will eventually be demolished although not until the buildings replacing them are completed and ready for use.

is being threatened by destruction of the vegetation and pollution of the waters.

Fortunately the consultants are aware of all these problems, and state in a special report issued in late 1977 that "facilities must be provided to accommodate a relatively high number of visitors as a matter of ecological protection and social welfare for users."

The main natural scenic features must be preserved and emphasised. Existing natural conditions will be preserved to offset the impact of development. In particular the right bank of the river, from which all the springs flow, will be maintained as it is in contrast to the garden proposed on the left bank.

"Contrasts between the river and hot springs water of Ma'in Valley and the bare colourful rocky slopes and cliffs should be preserved. Architecture should seek to blend with the landscape," the report adds.

"Protective perimeters must be created to prohibit public access in order to protect fresh water catchment and larger hot springs destined for use by visitors to the site."

"Excavation and erection should be conducted with extreme care, in most cases without explosives or heavy excavating machinery, to prevent disturbance of hot springs and landslides."

Development in two phases

The development of the spa complex will be executed in two phases. Construction will start on the spring and is expected to continue for four years. Phase I includes a public restaurant opposite the waterfall of Al Shallah with parking facilities nearby. The restaurant will seat up to 300 outside and 150 inside, with room for future extensions. A new low income bath with a cave-like tepidarium will be located within a new campground near a projected arch bridge. It will be able to handle 1,000 visitors daily (500 male and 500 female). Together with the new mosque across the road it will mark the entrance to the valley garden. The new mosque will stand in a wooded area. The campground will provide facilities for approximately 300 visitors and bungalows for 60 to 100 people or a second campground will be built slightly further up the stream. On the hill above will be picnic units with room for 300 to 400 daytrippers. More picnic units and/or campground sites are planned above these facilities at a later date.

Phase II includes that part of the complex which will attract higher income visitors - this will primarily be the construction of the hotel complex and thermal clinic. The hotel will contain approximately 100 rooms. The six-floor building will be set in tiers into the side of the hill. Architecturally it will have an oriental look and match the surrounding landscape. A new high/middle income bath with a cave-like tepidarium will be situated on the Al Shallah promontory which is at present inaccessible. A road will be constructed along the north side of the gorge leading to the hotel which will also serve the bath and a landscaped viewing point is to be created on the rim of the Al Shallah plateau. More picnic units/campground sites are proposed on the slopes. During the construction of the complex existing facilities will be available to visitors and care taken to allow camping to continue.

The consultants suggest alternatives for facilities favouring either a) low income b) middle income or c) high income visitors. As it is unlikely that more than a small minority from the high income bracket will be attracted, and as there is insufficient room for extensive low income facilities, the favoured plan is to give priority to mixed middle/low income facilities. The total capacity for visitors at residents at the end of Phases I and II would therefore be approximately 2000 per day of which about 45 per cent will be low income, 47 per cent middle income and 8 per cent high income visitors.

Characteristics of the site (geology, hydrogeology, scenery) will induce high development costs. It is probable that part of the investment will be considered as a subsidy, the rest being divided into soft and commercial loans.

It is suggested by the consultants that

a) financing of infrastructure components within hot spring development such as fresh water supply, sewage and sanitation systems should be by means of soft loans, and that

b) financing of the main facilities such as hotel complex baths should be by means of commercial loans and

c) financing of interstitial development i.e. afforestation: landscaped garden, fences and dykes should be by means of net budget allocations through the Ministry of Tourism.

Total investment is initially estimated at JD 2.7 million.



THE MAP shows the locations of the thermal springs in Jordan. From Al Hammeh in the north near the Syrian border to Afra in the south, all but two - Afra and Abu Dabbeh - are also mineral. The three largest are Al Hammeh, Zarqa and Zarqa Ma'in. Ghor Al Hadithieh is relatively small but sulphurous and used by locals for skin diseases. Afra, although not mineral, has a constant discharge and is very hot - 45°C. At Azraq the hot spring which was originally discovered whilst digging for a well, is temporarily compressed since it is quite small and the Ministry of Tourism and Antiquities will be channelling the flow into two swimming pools to be built shortly at a tourist centre adjacent to the spring. Abu Al Zayghan has not been tested but is obviously sulphurous. Al Hammeh was developed by a private company in the 1960's and offers basic amenities for the visitor - swimming pool, restaurant, campground etc. Zarqa, potentially the most interesting of all, since the site is on the shore of the Dead Sea, has medicinally the same properties as Zarqa Ma'in and will be developed not only as a spa but also as a Dead Sea resort when the new highway running along the eastern shore of the Dead Sea is finished in two year's time. At present the site is inaccessible to the general public. Zarqa, near Jarash, has an excellent concentration of salts similar to Zarqa Ma'in.

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National News Roundup...

UAE to support Arab university in Nablus

ABU DHABI, April 11 (R). — The United Arab Emirates (UAE) has promised to support a newly-created Arab university in the Israeli-occupied West Bank town of Nablus, the Emirates News Agency reported. The pledge was made by the UAE President, Sheikh Zayed bin Sultan Al Nahaiyan, when he met the former Mayor of Nablus, Mr. Hikmat Al Masri last night, the agency said. It quoted Mr. Al Masri as saying he delivered a message from King Hussein concerning the Al Najah National University in Nablus, which was created last year.

Arab tourism committee meets

AMMAN, April 11 (JNA). — An Arab committee studying the transformation of the present Arab Tourism Union into a specialised agency met in Amman today under the chairmanship of Minister of Tourism Ghaleb Barakat. The committee which comprises representatives of Jordan, Iraq, Egypt, Kuwait and Algeria discussed the basis for establishing the agency, financial affairs and relations with the Arab League. The formation of the committee was a upon a recommendation by the Arab ministers of tourism at their last month's meeting in Amman.

Taxi fares go up

AMMAN, April 11 (JNA). — Taxi fares are to go up by fifty per cent, Minister of Transport Ali Suhaimat announced today. He said taxi meters will from now on register 50 fils instead of 120 at the start of a trip.

Third childrens book exhibition takes place Thursday

AMMAN, April 11 (JNA). — The third childrens book exhibition will be opened Thursday at the King Hussein Jub, Jabal Amman under the auspices of Crown Prince Hassan and Princess Sarvath. The exhibition is being organised by the Friends of the Children Club, in cooperation with the Arab Centre for Research and production.

Top level medical team from Edinburgh Univ. visits Univ. of Jordan

By Brenda Fineson
Special to the Jordan Times

AMMAN, April 11 (JT). — A top level medical team from the University of Edinburgh arrived here Monday evening on a five day official visit. Dr. Kamel Aljoudi, head of the University of Jordan Hospital, told the Jordan Times today. The team includes the Dean of the Medical School at the University of Edinburgh, Prof. R.H. Girdwood, the Vice President of the University, Mr. A.I.S. McPherson, Professor of Radiology at the University, Prof. Eric Samwell, and Dr. H.M. Cameron, Senior Lecturer in Pathology. During the visit, which is in response to an invitation extended by the former president of the University of Jordan, Dr. Ishaq Farhan, the delegation will look into all services offered by the university hospital, the system of teaching used there and the standard of the students. This visit is the second in a series of contacts with Edinburgh University which began last month when a team from the University of Jordan went to Edinburgh to investigate changes in the medical curriculum there. "It is hoped," Dr. Aljoudi told the Jordan Times, "to increase collaborative work and research between the two universities." At the moment the possibility of beginning an exchange programme between the universities is under review. This programme will be for professors and graduate M.D.'s working in the hospital. The delegation is expected to return to Britain on Saturday April 15.

Sample Spanish cooking at its best at YWCA

AMMAN, April 11 (JT). — Great news for cookery fans! At 10:30 Wednesday morning La Contessa Marija Ondino, wife of the Spanish ambassador to Jordan, will be demonstrating her culinary skills for the benefit of all at the YWCA building near Third Circle.

La Contessa will reveal the secrets of four popular Spanish dishes -- yes, including paella -- and all those present will be invited to sample each dish, and will receive a copy of the recipes which includes some useful serving hints. The demonstration is the third in a series of international cookery demonstrations started by the Programmes Committee at the YWCA two months ago in which Italian and Chinese dishes have already featured. These drew crowds of 101 and 80 respectively.

The demonstrations take place on the second Wednesday of every month and so far the Programmes Committee has had no trouble in finding eager ladies from various embassies and cultural groups to take part. The entrance fee is 500 fils and will cover the cost of tea and biscuits. So go along, have a nice morning and add a few more recipes to your international cookbook.

Coming & Going...

Pakistani military delegation leaves

AMMAN, April 11 (JNA). — The Pakistani military delegation led by Lt-Gen. Sadeq Raheed Abbasi left for home today after a several-day visit to Jordan.

Ghaleb Barakat will head delegation to Mexico City

AMMAN, April 11 (JNA). — A Jordanian delegation led by Mr. Ghaleb Barakat, the Minister of Tourism, will leave for Mexico City on Thursday to attend a four-day world conference on tourism and air transport due to start on April 17. The International Tourism Organisation and the International Air Transport Association (IATA) are co-sponsors of the conference which will tackle such subjects as promoting world tourism as well as looking into 18 working papers dealing with air transport and its matters related to tourism.

Al Masirah editor leaves

AMMAN, April 11 (JNA). — The Chief Editor of the Bahraini newspaper Al Masirah, Khalifeh Hassan Qasem, left here this evening after a five-day visit to Jordan.

Bahraini cardiologist leaves

AMMAN, April 11 (JNA). — Dr. Ali Akbar Murad, an official of the Bahrain Health Ministry, left here for Rome after a three-day visit to Jordan. Praising what he described as the high standard of health services in Jordan, Dr. Murad who is a cardiologist himself, said a large number of Bahraini heart patients go to Al Hussein Medical Centre for treatment. Dr. Murad will represent his country at a cardiologists conference opening in Rome tomorrow.

Austrian tourism official arrives

AMMAN, April 11 (JNA). — The director of tourism in Salzburg, Austria, arrived here this evening on a week-long visit to Jordan at the invitation of the Ministry of Tourism and Antiquities. He will hold talks with ministry officials on Jordanian-Austrian tourism cooperation, particularly in the field of training.

LOCAL EXCHANGE RATES

	Jordanian fils
U.S. dollar	306.00/308.00
U.K. sterling	574.00/578.00
Swiss franc	152.40/153.30
French franc	165.00/166.00
Italian lire (for every 100)	67.30/67.70
Japanese yen (for every 100)	36.00/36.20
Dutch guilder	139.20/140.00
Belgian franc (for every ten)	142.80/143.70
Swedish crown	97.60/98.20
	67.10/67.50

Economic and Business News

Allia, PIA talks under way

KARACHI, April 10 (R). — Chairman of Allia, the Royal Jordanian Airline Ali Ghandour yesterday met officials of Pakistan International Airlines (PIA) and afterwards told reporters new areas of collaboration between the airlines were being discussed. Mr. Ghandour, who arrived here Sunday with a high-level delegation, expressed satisfaction over cooperation between the airlines during the past eight years.

Jarash Municipality gets JD 700,000 loan from ministry fund

JARASH, April 11 (JNA). — Jarash Municipality has obtained a JD 700,000 loan from the credit fund of the Ministry of Municipal and Rural Affairs to carry out a number of projects in the city, the Jarash district governor said today. He said the municipality will soon construct a sewerage system and a station for purification of water in the city. Other projects to be financed by the loan include the construction of a children's park and the building of an underground reservoir with a capacity of 200 cubic meters of water.

Revenue from income tax up 76 per cent

AMMAN, April 11 (JNA). — His Highness Crown Prince Hassan was today informed that income-tax collection during the first quarter of this year rose to 76 per cent over the same period last year. Last month income-tax revenue hit a record number of nearly JD 2 million. The Crown Prince paid a visit to the Income Tax Department and discussed with Finance Minister Mohammad Dabbas and Director of Income Tax Department Saleh Khasawneh ways of developing tax-collection to include all categories of income earners, and the introduction of a computerised system.

Arab Potash Co. financiers gathering hears favourable feasibility report

By a Jordan Times staff reporter

AMMAN, April 11 — The Arab Potash Company (APC) Financiers Conference opened this morning at the King Hussein Youth City with a smooth presentation of Jordan's biggest ever industrial project.

Welcoming delegates from major international funding agencies, Mr. Ali Khasawneh, Chairman of APC, spoke of the "great national hope" that is attached to the \$422 million potash project, and of the social and economic revolution that it would bring about in the country.

"The project will sharply improve Jordan's balance of trade," Mr. J.D. Beuhler, Vice President of Jacobs Engineering Co., APC's main consultants, announced at the start of a film and slide show, describing the development of the project. Potash exports are calculated to improve Jordan's balance of trade figure by \$84 million (in 1977 currency) a year, when full production (1.2 million to-

ns a year) is reached in 1984.

Representatives of Alexander Gibb and Partners, who are responsible for the civil works construction, then described the technical problems of extracting potash from the brine of the Dead Sea. Despite extremely soft mud, the remoteness of the site, and the inhospitable climate, the engineers declared their experimental projects successful and presented their designs for building ten kms. of canal, 10,000 hectares of evaporation pans, and a township to house 3,000 people.

Eastern markets

It is expected that Jordan's main market for potash will be in the east -- notably in India and Japan. In these areas APC would be able to maintain a competitive edge over their major competitors from Canada, the final feasibility report declares. The company is expecting an "attractive" 17.8 per cent financial return on investment, with the return on equity rising to as much as 22.6 per cent. One hundred and sixty eight million dollars of APC's capital is to be in equity. It hopes to raise as much of the rest as possible in the form of soft loans. So far the company has raised a capital of JD 40 million.

Tomorrow delegates to the conference will be given a guided tour of the potash site on the southern side of the Dead Sea. During the concluding session on Thursday a discussion will focus on financing arrangements for the scheme. And the last item on the agenda is to fix a date for the pledging conference when it will finally be known how successful Jordan has been in selling its scheme to the world's major development financiers. Representatives of the World Bank, the Arab Fund for Economic and Social Development, the Islamic Development Bank and the Libyan government were among those invited to hear the feasibility report on Jordan's potash project.

Amman Stock Exchange Report

NAME OF COMPANY	PAR value	Volume traded	Opening price	Closing price
Jordan Petroleum Co.	JD 5,000	660	6,600	6,600
Jordan Cement Factories	JD 10,000	298	14,900	14,900
*Jordan - Gulf Bank	JD 1,000	2,214	1,100	1,100
**Dar Aklawa Development & Investment Co.	JD 1,000	700	1,650	1,650
Arab International Hotels Co.	JD 1,000	32	0,650	0,650
Jordan Tobacco and Cigarette Co.	JD 5,000	1,346	7,400	7,400
Arab Aluminium Co.	JD 1,000	950	0,950	0,950
Jordan Textiles Factories	JD 1,000	85	0,850	0,850
National Maritime Co.	JD 10,000	1,650	—	10,500

Total volume traded, Tuesday, April 11 JD 7,935

*50 per cent of share capital paid.
**75 per cent of share capital paid.

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PRESENTS

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TICKETS AVAILABLE AT:

Amman Sport — Nabouh Street
First Bookshop — Jabal Amman
University Bookshop — Jabal Luweibdeh
Lebanon Grocery — Jabal Hussein
Sakkar Pharmacy — Downtown
Khalaf Stores — Jabal Luweibdeh
Lulus Pharmacy — International Hotel

Sweet Supermarket — 5th Circle
Babiche — Shmeisani
Rainbow Supermarket — 1st Circle
College Pharmacy — 1st Circle
Silver Market — 5th Circle
Grand Palace Hotel

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JORDAN TIMES DAILY GUIDE

JORDAN TELEVISION

Channel 3 & 6:

5:30 Quran
5:45 Cartoons
6:00 Partridge family
6:15 Shubad
6:40 Special programme on children's books
7:00 Thalibia
8:00 News in Arabic
10:15 News Summary
11:00 News in Arabic

Channel 3:

7:30 Sports and the youth
8:30 Arabic series
8:10 Television magazine
Channel 6:
7:30 News in Hebrew
7:45 Varieties
8:30 Dad's army
8:10 Dances of Dula str.

Channel 10:

10:00 News in English
11:15 Young British
11:30 Farming World
12:30 Radio News
12:45 Take it or Leave it
1:15 Sports Round-up
1:30 News: 24 Hours
1:45 Story Time
1:50 News Bulletin
1:55 News Reports
1:58 Sign-off

EMERGENCIES

Doctors:
Amman:
Basmal (75222)
Yusef Samara (82354)
Riad:
Rashed Al Sa'd
Zarga:
Chal Rousan
Taxis:
Asfur (22222)
Rashed (22719)

Shaboud (21091)
Rafay (20995)
Pharmacies:
Amman:
Shaboud (21091)
Na'am (26194)
5th Circle (11112)
Riad (24222)
Riad:
Awlad
Zarga:
Aga

BBC RADIO

GMT

06:00 News: 24 Hours
06:45 Sarah Ward
06:50 News: Press Review
07:00 News: 24 Hours
07:30 Sarah Ward
07:45 Report on Religion
08:00 News: Press Review
08:15 World Today
08:30 Financial News
08:45 Paperback
10:00 Talkabout
10:50 How to be a Muslim
11:00 News: 24 Hours
11:15 Young British
11:30 Farming World
12:30 Radio News
12:45 Take it or Leave it
1:15 Sports Round-up
1:30 News: 24 Hours
1:45 Story Time
1:50 News Bulletin
1:55 News Reports
1:58 Sign-off

GMT

15:00 Radio News
15:15 Outlook
15:30 News: 24 Hours
15:45 Academy of St. Martin
16:15 World Today
16:30 News: Book Choice
17:15 Discovery
17:45 Sports Round-up
18:00 News: News about Britain
18:15 Radio News
18:30 Top Twenty
18:50 Outlook: News Summary
19:20 Stock Market Report
19:45 Golden Treasury
20:00 News: 24 Hours
20:20 Meet the Composer
21:00 Report on Religion
21:15 Soccer Special
21:30 Alister Krieger
22:00 News: World Today
22:25 Financial News
22:35 Book Choice: Reflections
22:45 Sports Round-up
23:00 News: 24 Hours
23:15 A Jolly Good Show
23:30 Matthew on Music

VOICE OF AMERICA

World and their Story
Feature: Short Stories
Country Music USA
News and Topical Reports
15:15 News fromListeners
18:30 New York, New York
Special English News
Words and their Story
20:15 Music USA (News)
06:00 GMT: News, etc.

AMMAN AIRPORT

Arrivals:

7:30 Cairo (EA)
7:35 Doha, Kuwait
8:10 Doha (AZ)
8:25 Doha (RJ-GF)
8:30 Beirut
8:50 Athens
10:35 Larnaca (CY)
11:15 Beirut
11:30 Athens, Bangkok
12:00 London
12:30 Kuwait (KAC)
13:00 Cairo
13:15 Jeddah (SDQ)
20:30 Baghdad, Athens
21:15 Frankfurt, Munich, Düsseldorf
21:40 London (BA)
21:50 Rome (AZ)

Departures:

8:00 Agaba
8:45 Beirut (MEA)
8:55 Cairo (EA)
9:00 Beirut
10:15 Athens
10:35 Larnaca (CY)
11:20 Athens, Bangkok
12:00 London
12:30 Kuwait (KAC)
13:00 Cairo
13:15 Jeddah (SDQ)
20:30 Baghdad, Athens
21:15 Frankfurt, Munich, Düsseldorf
21:40 London (BA)
21:50 Rome (AZ)

USEFUL TELEPHONE NUMBERS (Amman)

Ambulance (government) Tel. 75111
Civil defence rescue Tel. 24381-4
Fire headquarters Tel. 22090
Fire, fire, police Tel. 19
Jordan Electric Power Co. (emergency) Tel. 38381-3
Municipal water service (emergency) Tel. 3711-3
Police headquarters Tel. 39141
Najdah roving patrol rescue police, (English spoken) 24 hours a day for emergency help Tel. 21111, 37777
Airport information (Alia) Tel. 55205
Jordan Television Tel. 73111
Radio, English Section Tel. 74124

CULTURAL CENTRES (Damascus)

Al Hums Theatre Tel. 226-448
Al Sha's Art Gallery Tel. 226-527
American Centre Tel. 226-362
Arab Cultural Centre Tel. 226-327
Damascus Cooperative Republic Cultural Centre Tel. 226-632
French Cultural Centre Tel. 380-894
Khalid Theatre Tel. 222-816
National Museum Tel. 114-854
Soviet Cultural Centre Tel. 226-650
Spanish Cultural Centre Tel. 324-008
Umayyad Art Gallery Tel. 324-819
Zahara Public Library Tel. 111-318

USEFUL TELEPHONE NUMBERS (Damascus)

Ambulance (government) Tel. 99
Chamber of Commerce Tel. 115-330
Electric Power Co. (repat) Tel. 226-887
Fire headquarters Tel. 91
Supermarket Tel. 56/97
Municipal water service Tel. 115-500
Time (in Arabic) Tel. 99

World Bank head visits Turkey

Major non-communist nations to hold economic summit in July

The nine-member European Economic Community (EEC) will be represented at discussions of subjects which concern it by West German Chancellor Helmut Schmidt, who will then be Chairman of the EEC's Council of Ministers, and by Mr. Roy Jenkins, President of the Common Market Commission, the statement added.

The joint statement added that the summit would give the

Finance Ministry officials said Turkey was seeking World Bank credits for a number of projects including the construction of a dam and a power plant, development of forestry and animal husbandry, and the extension of an iron and steel mill.

Officials of the participating countries held an initial round of talks here at the end of last month to prepare for the summit, which will bring U.S. President Jimmy Carter to West Germany for the first time since he took office.

The 130-million rial (\$40 million) plant will turn out 6,500 units a year, according to Dr. Gernot Moerner, the General Manager of the National Automobile Industries.

Conservative budget proposed for Canada

The budget proposals called for neither for government spending nor job creation programmes -- a surprise with a re-

Rangers take victory over Yankees

Cleveland Indians nipped the Boston Red Sox 5-4. Andre Thornton had a three-run homer in the third, helping the Indians build an early 4-0 lead.

Cincinnati	4
Los Angeles	4
San Francisco	2
Atlanta	1
San Diego	1
Houston	0

0	1.000	—
0	1.000	—
1	.667	1 1/2
3	.250	3
3	.250	3
5	.000	4 1/2

Baseball standings and results after Monday's games.

EAST

	W	L	PCT.	GB
New York	4	1	.800	—
Philadelphia	2	1	.667	1
Pittsburgh	2	2	.500	1 1/2
St. Louis	2	2	.500	1 1/2
Chicago	1	3	.250	2 1/2
Montreal	1	3	.250	2 1/2

WEST

Cincinnati	4	0	1.000	—
Los Angeles	4	0	1.000	—
San Francisco	2	1	.667	1 1/2
Atlanta	1	3	.250	3
San Diego	1	3	.250	3
Houston	0	5	.000	4 1/2

Monday's games:
New York 6, Chicago 6
St. Louis 11, Pittsburgh 2
Atlanta 8, San Diego 7
Los Angeles 5, Houston 2

AMERICAN LEAGUE

EAST	W	L	PCT.	GB
Milwaukee	3	0	1.000	—
Cleveland	2	1	.667	1
Detroit	2	1	.667	1
New York	1	2	.333	2
Toronto	1	2	.333	2
Boston	1	3	.250	2 1/2

WEST

California
Chicago
Kansas City
Texas
Minnesota
Oakland

Monday's games:
Cleveland 5, Boston 4
Kansas City 4, Baltimore 2
Texas 5, New York 2
Oakland 1, Seattle 0
California 3, Minnesota 0

FOREIGN EXCHANGE RATES LONDON MARKET REPORT

LONDON, (R). — Following are the buying and selling rates for leading world currencies against the dollar at the close of inter-bank trading on the London foreign exchange market last night. Tourist rates will differ from those quoted below.

One dollar	1.875/90	quoted	U.S. dollar
One starting	2.0125/35	West German	marks
One dollar	2.1470/90	Dutch guilders	
	1.8575/95	Swiss francs	
	31.32/35	Belgian francs	
	4.5475/95	French francs	
	850.90/851.20	Italian lire	
	219.10/20	Japanese yen	
	4.5600/15	Swedish crowns	
	5.5445/60	Norwegian crowns	
	5.2980/90	Danish crowns	

The market closed on Tuesday quietly mixed, awaiting the British budget proposals, dealers said. At 15:00 the F.T. index was up 2.8 at 466.1.

Equities met some speculative interest ahead of the budgetary measures, but government bonds were defensively marked down. U.S. stocks and Canadian issues gained narrowly.

Glaxo closed 9p higher at \$25p after further consideration of Monday's 1977 results, while Rio Tinto Zinc ended 4p higher at 195 on results above market expectations.

Gold price not received.

ANNAN MARKETPLACE

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World waits with baited breath in the countdown to biggest ever weather project

By Pat Burns

GENEVA (WFS) — Thousands of scientists from virtually every country in the world are gearing up for what the World Meteorological Organisation (WMO) claims is the largest and most complex scientific undertaking of its kind ever attempted. It is the Global Weather Experiment, a year-long information gathering process that will directly involve nearly every professional weather forecaster in the 147 WMO member countries.

For twelve months from December 1 1978, a vast array of atmospheric and ocean-

ic observations will flood into receiving stations and data processing centres all over the world. Every day basic meteorological measurements will be taken by 10,000 land stations, 7,400 merchant ships, nine fixed ocean weather ships, numerous reconnaissance and commercial aircraft (supplying an average 3,000 reports daily), five geostationary satellites and a number of satellites orbiting above the earth's poles.

In addition, an even greater flow of information will be generated from hundreds of meteorological balloons, buoys and special research aircraft during two 30-day special

A 12-month exercise involving scientists in nearly 150 countries should revolutionise weather forecasting from next year.

observation periods.

The experiment might appear an exercise in superlatives, but the meteorologists who have been planning it at the WMO's Geneva headquarters have nevertheless had to compromise because of expense. It is impossible to put a single sum on the cost of the experiment since each national weather forecasting organisation is paying for its own

part of the experiment. But, if there had been unlimited money, the scientists would have preferred to have 200 instead of nine of the fixed ocean ships, each of which has an annual operating cost of \$2 million.

"A compromise is necessary between what is scientifically desirable, what is technologically feasible and what is economically attainable", is

how a WMO spokesman puts it.

The most tangible result of all this activity should be accurate worldwide weather forecasts for periods of 10 days ahead or more by the mid-1980s.

At the moment there is still a large degree of human interpretation based on a forecaster's personal experience in the meteorological business. And, despite the WMO's own long-established World Weather Watch system for global forecasting, accurate weather predictions are still limited mainly to individual locations in which a high level of experience has been built up in a particular weather forecasting organisation.

Computers do play a big part in weather forecasting today, but the basic tools the computer works with are outdated and suspect, hence the continuing dependence on the forecasters' personal experience.

"Models"

The basic tools of a weather forecasting computer are "models", or mathematical equations which represent the average behaviour of the weather based on previous observation. This sort of numerical weather prediction was first devised by a British meteorologist, L.F. Richardson, 60 years ago, although for 25 years it was impractical because of the large number of calculations necessary to arrive at the basic equations or "models". One estimate was

that an army of 64,000 leading mathematicians working for a year round the clock would be necessary to process all the meteorological observations into neat "models".

Today, however, computers can do work in seconds. But the data on which today's "models" are based is notoriously inaccurate. The Global Weather Experiment will replace those inaccurate "models" with the most precise data possible under modern conditions.

At the same time as the Global Weather Experiment is taking place, a special monsoon experiment will occupy scientists in the Bay of Bengal and the Arabian Sea. During the coming winter and the summer of 1979, an expected six Soviet and Indian ships will concentrate on meteorological observations of particular significance in the formation of the monsoon.

Global telecommunications will also be under test during the 12-month period since scientists want to start work on the data as quickly as possible, not just because of a natural feeling of impatience after 10 years of waiting, but also because the extra information will help improve worldwide forecasting from 1979. The main data processing centres will be in the USA, USSR, Japan, U.K. and at the WMO's Geneva headquarters. But numerous radio and satellite receiving stations will play a vital role in transmitting that data to the computer centres, where the work will really begin.

Scientists search for hand pump to fit the bill

Hand pumps used in villages have to stand up to between five and nine million strokes a year -- and they break down. Their basic design has hardly been improved in a hundred years. A team of scientists is now trying to design a pump that will be really reliable, tough and cheap.

By David Henry

OTTAWA (FT) — Delegates to the U.N. sponsored International Water Conference called for billions of dollars in aid to provide "water for all" by 1990. The need is great, especially in the rural areas of developing countries, no doubt of that. But too much enthusiasm could be as damaging as too little.

A brief look at the experience with large-scale rural water supply programmes in the last 10 years does not inspire confidence. In one Asian country, for example, about 50,000 wells were drilled in hard rock, drought-prone regions at a cost of about \$40m. They were intended to bring water to some 40m people, but today an estimated 80 per cent of the wells are no longer producing water. In East and West Africa the same story is repeated, with some countries reporting failure rates of up to 90 per cent.

Out of date machinery

What is wrong? If you ask a villager he will likely show you a rusty piece of machinery sitting on top of a pipe in the ground. The machine was designed more than 100 years ago for use in a very different environment, and it has changed very little since. It is called a hand pump. The villager does not think it is a very good piece

of machinery -- and he is right.

There are other aspects of the situation: managerial, financial and sociological. But until there is some improvement in the technology these problems will be very difficult to deal with. The present situation is like trying to design a public transit system where the choice of technology is limited to 1920 Ford Model T's.

What is badly needed, then, is a better hand pump. And a group of scientists at the University of Waterloo in Canada are hoping that they have it. With the support of a grant from the International Development Research Centre, the Waterloo team -- composed of senior members of the engineering faculty with backgrounds in physics, fluids and mechanical engineering -- has been working on the problem since the beginning of the year.

Their assignment was to "optimize the design of a piston and check valve configuration for use in low-cost rural water pumps". In other words, to produce a pump that is reliable, tough, inexpensive, requires no special maintenance, and can be adapted to local manufacture.

With these factors in mind, the scientists avoided traditional materials such as bronze, brass, cast iron, and mild steel. Instead they have concentrated on the use of plastics and

hardwoods. They reasoned that plastic injection moulding could dramatically reduce manufacturing costs, and many developing countries already have the basic injection moulding capacity to produce components.

Bearings are one of the major problems with existing pumps. Yet the bulk of the cart of India, which carry more freight each day than the Indian railways, run on wooden bearings. The North American petrochemical industry also imports African hardwoods for use in the manufacture of high stress bearings.

Second phase

Much of the research on the applicability of local hardwoods for bearings will be carried out by scientists in the developing countries. Now that the Waterloo team has selected the best prototypes from the different designs they produced in the laboratory, the project will move into its second phase: extensive field testing and research.

The most promising prototypes are capable of being adapted to high, medium and low lift, and can be manufactured in four sizes, from one and a half to three inches in diameter. This flexibility in design will allow the pumps to meet the wide variations in local conditions that they will encounter in actual use.

Testing in the village is essential. Another research group recently tested a modified pump in the laboratory by operating it for one million strokes. Later, someone doing research at the village level discovered that a hand pump under typical village conditions is subjected to between five and nine million strokes a year! That pump has not solved any problems.

Discussions are now underway between the International Development Research Council and five developing countries already engaged in pump development. The aim is to organise a five-year multi-country testing programme that will feed the actual field experience back into the design exercise. In this way further modifications can be incorporated if necessary.

It is a lengthy process, but it will be worth it. Because the end product will be a hand pump that will provide a positive answer to the three practical questions of the village: Will it work, will it last, can I afford it?

-- Financial Times News-Features

Moonlighting gets out of hand

By Jack Goss

PARIS (FT) — Few Parisians who pass an elegant six-storey office block a stone's throw from the Champs Elysees know its shameful secret: it was built illegally by uninsured workers who were not declared to the authorities by a boss who never paid a centime in taxes.

"The lump" or "moonlighting" -- the use of undeclared labour -- has become a scourge in France, a country with 12 m. unemployed but with one worker in ten now deriving a sizeable slice of his income from this source.

Employers complain that their prices are being undercut by this form of unfair competition. The jobs are said to be the prevalence of the "lump" makes it impossible for them to obtain registered employment. Earnings from the "lump" are estimated at seven billion

francs a year. But during the past 12 months the French courts have convicted only eleven people for indulging in this forbidden activity. Sentences imposed by the penal code range from a fine of between 600 and 2,000 francs and jail terms of from ten days to one month.

For the building industry in the Paris area work performance by moonlighters is reckoned as equivalent to 4,500 full-time jobs a year with a turnover of 40 billion francs. Taxes evaded add up to 150 million francs and unpaid social security contributions to 250 million francs.

Out of hand

Gerard Longhy, President for the Paris Building Federation's Anti-Lump Committee, says: "When our order books were full, this form of unfair competition was not too serious. But we ought to have reacted sooner."

"Now the crisis has got completely out of hand. Sales of paying tiles have increased by 20 per cent over the past two years, but more and more building firms have gone bankrupt. What happens to the tiles? They are being used by lump workers. It's the same with the booming sales of cement."

Longhy holds the state responsible. He says: "By underpaying its civil servants and putting them on short time the government encourages people to take on extra work in order to make ends meet."

"Heavy value-added tax on maintenance tasks like painting, plumbing and electricity are an incentive to the householder to look for undeclared labour."

Jean-Claude Martini, a professional carpet-layer, says: "The authorities could put an end to moonlighting by obliging suppliers of building materials to sell only to registered artisans, instead of offering trade discounts to any purchaser."

But Martini admits that he often hires unskilled personnel to lay his carpets. He says: "I pay them less than the official hourly wage. But they don't have to pay income tax and I don't have to declare the VAT or social security dues which I owe."

Seasonal farm work, accountancy, secretarial services and gardening are notorious for the proportion of "lump" labour involved.

The garment industry ranks with building among the major offenders. Ljuba Susac, a 37-year old Yugoslav-born manufacturer who has been in business in France for the past 10 years, says: "At least 40 per cent of the work done in the Sentier rag trade area of Paris is not declared."

Susac adds: "This applies not only to the labour force but to the purchase of the cloth in Belgium or Italy and to the sale of finished garments."

Manufacturers make a widespread practice of lending sewing machines to housewives who, uninsured and undeclared, work 14 hours a day in their own homes and earn up to 1,800 francs a month. The French police estimate that 300 Paris garment firms are using "lump" labour and that 10 per cent of the output for the whole of France is produced in this manner.

Jean Hardy, a Paris suburbanite, takes up the cudgels on behalf of the moonlighters. Hardy says: "No building firm would agree to clear the rubbish from the site on which our house was built. They said the gate was too narrow for a bulldozer to get through. One gave us a tentative estimate of 10,000 francs as the lowest charge for the job. Finally it was done by a city parks employee in his spare time for 2,000 francs."

"Lump" workers are recruited for many walks of life including students, senior executives and members of the liberal professions as well as the unemployed. Few are prepared to accept the argument that they are devaluing their own work and that of members of their profession.

Secretary of State for Manual Labour Lionel Stoleru accepts that it is going to be an uphill struggle to change the Frenchman's attitude to the "lump". He says: "It is difficult to abolish this practice, which is a problem both for the state and for the conscience of every Frenchman. But we must condemn this lack of civic spirit."

-- Financial Times News-Features

FORECAST FOR WEDNESDAY, APRIL 12, 1978

Your Daily HOROSCOPE

from the CARROLL RICHTER INSTITUTE

GENERAL TENDENCIES: An excellent time to make constructive plans of action by which you can add to your success in the days ahead. Solve whatever problems that come up with intelligence. Obtain the data you need.

ARIES (Mar. 21 to Apr. 19) Ideal day to confer with associates and exchange views and ideas that will bring advancement. Don't neglect correspondence.

TAURUS (Apr. 20 to May 20) You have good ideas for adding to present abundance but you have to be more businesslike to get good results. Relax tonight.

GEMINI (May 21 to June 21) A day when you can easily put across your views and new ideas to others. Show increased devotion to loved one.

MOON CHILDREN (June 22 to July 21) Find the right way to gain your aims early in the day. Go to the right sources for the information you need.

LEO (July 22 to Aug. 21) Contact new and old friends with whom you want to have more dealings in the future. Make the evening a most enjoyable one.

VIRGO (Aug. 22 to Sept. 22) Talking with higher-ups now can do much to help you advance in career matters. Be more interested in civic affairs.

LIBRA (Sept. 23 to Oct. 22) You have new ideas that need work on them now if they are to be successful. Secrets come to light by delving into them now.

SCORPIO (Oct. 23 to Nov. 21) Be sure not to overlook any responsibilities you are committed to. Increased happiness can be yours with the one you love.

SAGITARIUS (Nov. 22 to Dec. 21) Serious talks with financial experts can bring excellent results at this time. Use extreme care in motion tonight.

CAPRICORN (Dec. 22 to Jan. 20) Schedule your work so that you can accomplish the maximum in the minimum of time. Be clever in a business dealing.

AQUARIUS (Jan. 21 to Feb. 19) Good day to enjoy the finest amusements you can think of in the company of congenials. Be careful of strangers today.

PISCES (Feb. 20 to Mar. 20) Take time to study a new project that could be quite remunerative for you in the future. Handle business matters wisely.

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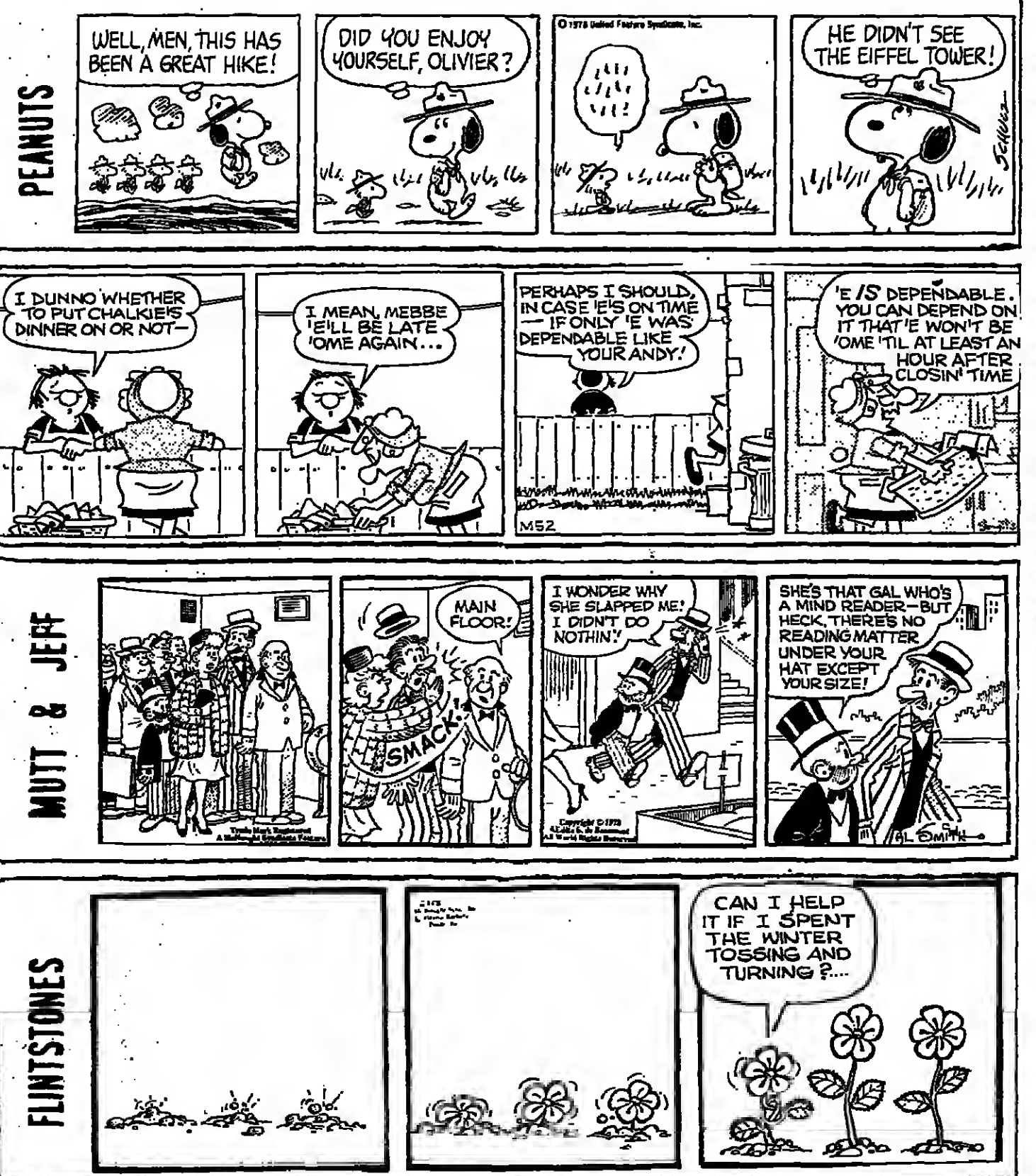
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